Architectural CONCRETE

Post Office for Miami Beach

By Howard Lovewell Cheney*, A.I.A.

PROGRESS is the keynote of Miami Beach—and in the design and construction of the new Post Office building, unrestricted opportunity was afforded to interpret a federal structure in a modern, contemporary manner. The design is reminiscent of Mediterranean architecture, and in a modified style most appropriate for this rapidly growing city of the American Riviera. To express the theme of progress, architectural concrete was chosen as the most effective exterior facing material. The results obtained prove the wisdom of this choice.

An American Eagle adorns the front of Miami Beach Post Office.

Southern Florida is the most tropic region within the boundaries of the United States and is ablaze throughout most of the year with sunshine and vivid colors. Buildings in such a sun-swept land best serve the eye when well-proportioned masses are relieved here and there by restful detail—a lesson learned from early Spanish colonial architecture. For this reason it was quite proper to enrich the modern lines of this most functional structure with motifs that suggest a Spanish origin.

In plan, the new Miami Beach structure is arranged for efficient handling of the mails and for maximum convenience of the public which uses it daily.

Construction of the central rotunda represented the major structural problem, and special precautions were taken to avoid undesirable thrusts and excessive shrinkage that might tend to cause cracks. Concrete for the rotunda walls above the roof, and for the dome and cupola, was not placed until all forms and shores for the roof beams supporting them had been removed and the concrete of these supporting beams had reached a strength of at least 2,000 p.s.i. in compression. Then the formwork for the rotunda walls and dome was so framed that the weight of the unhardened concrete was supported by the roof beams and not transferred to the ground through shores or other falsework.

A smooth texture was desired for the finish of most exposed surfaces, and this was accomplished by the use of plywood forms. Both internal and external vibrators were used in the placing of the concrete, and all formwork was well braced to withstand the pressures induced. Care in setting the forms was also responsible for the finely molded surfaces and sharp detail.

As the forms were removed any imperfections or holes left by tie rods were filled by pressure gun with color-matched cement mortar. Exterior surfaces were then given a brush coat of mortar composed of 1 part white portland cement and 2 parts white sand to which a small amount of limeproof and sunproof mineral pigment was added to produce a pale buff color. Immediately after applying this brush coat, the plain surfaces were rubbed with a power-driven, No. 16 carborundum wheel until all form marks were erased and the surfaces were smooth. Molded surfaces were given a similar treatment by hand rubbing. After rub-

*Architect, Procurement Division, Treasury Department.

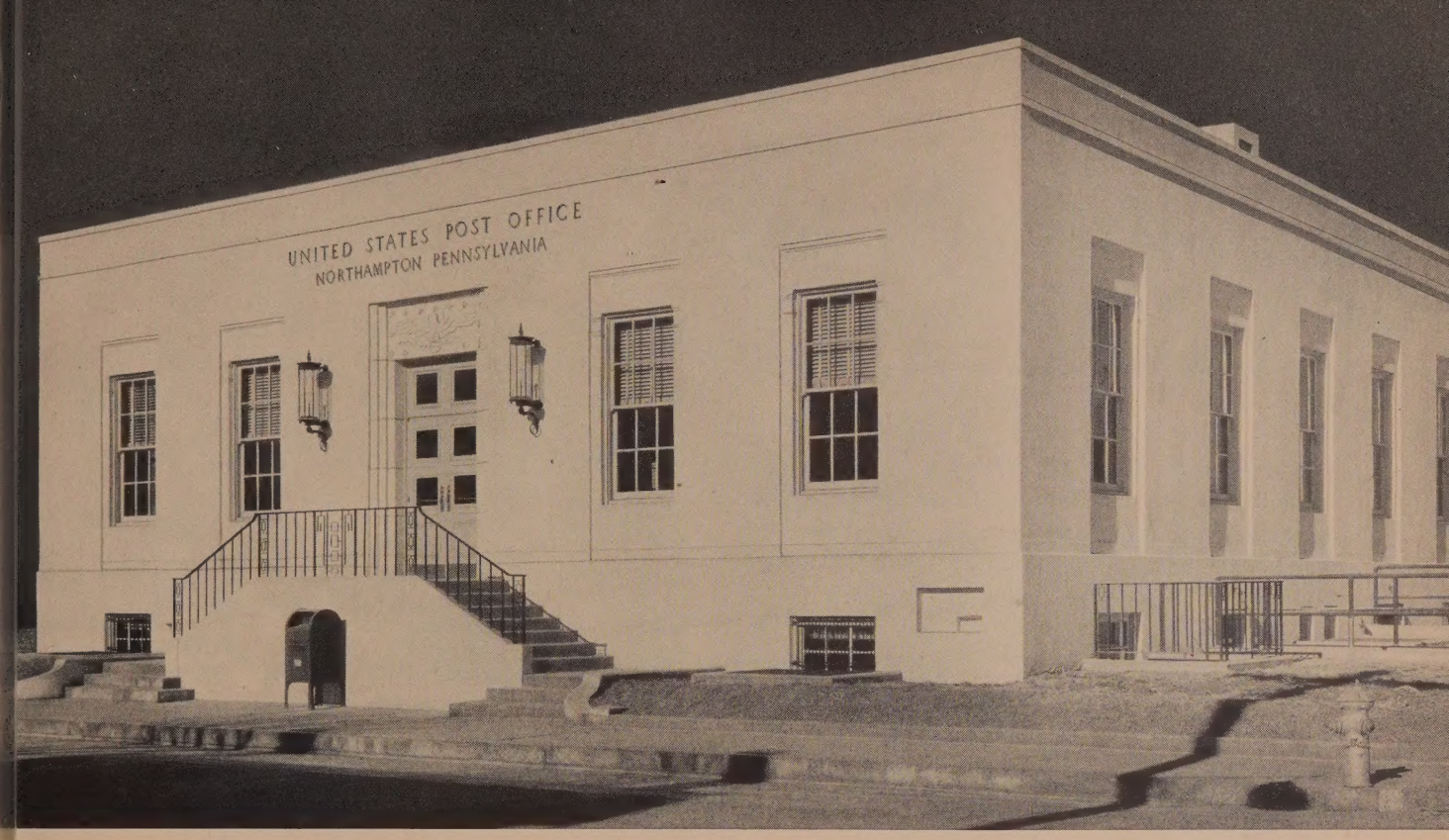
bing, surface material which had been ground to a paste was carefully brushed over the entire surface and permitted to set.

After a period of 30 days during which the concrete was kept damp, a final rubbing was given with a No. 30 carborundum, and the surfaces washed down. Curing then continued for another week while the walls dried to a uniform color and smooth texture.

Native Florida keystone—strikingly similar to travertine in appearance—was used liberally for window trim, sills, cornices and copings. This material blends pleasingly with the surrounding areas of concrete. Pink Georgia marble was selected for porch and entrance steps as well as for main entrance trim. Additional color was introduced by the delft blue tile roof. The building is appropriately landscaped with native planting material and a variety of palm trees.

The design was prepared under the supervision of the writer as a consulting architect, Procurement Division, Treasury Department. A. Farnell Blair, Lake Charles, La., was the general contractor.

Walls of the entire building were formed against plywood and finished by rubbing with carborundum stone. Trim for the building was Florida keystone, which resembles travertine, and Georgia marble was used for the porch floor. The ceiling decoration is stenciled on the concrete.



The new Post Office at Northampton, Pa., completed in 1938, was dedicated in June, 1939. Its smooth walls are rubbed and finished with buff cement paint. Designed by the Procurement Division, Treasury Department, it was built at a cost of $65,000 by Mutual Construction Co. of New York.

Post Office at Northampton, Pa.

THE members of the Exchange Club of Northampton, Pa., were pretty sure that the town's new post office was generally approved by the citizenry; but to make certain, they took a poll of the town, and the 89 per cent return said "okay". So, for dedication day last June 14, which was also Flag Day, the club decided to do something about it by mailing out special "covers" or envelopes with pictures of the new building so that philatelic fans among the 2,000 and more architects and others invited to the dedication could add a prize to their stamp collection. The dedication party was a big success.

This post office, completed in June, 1938, is a modern architectural concrete building with somewhat classic lines. It is 60x60 in plan, one story, and an excellent job of concrete forming.

The building has concrete foundation walls which are finished on the inside with two coats of cement paint. Basement floor is concrete 4 in. thick placed on the ground, and the first floor is 5-in. slab and beam construction.

The 12½-in. walls were cast full height (18 ft.) in about four days' actual placing time. Plywood panels, fabricated in sections 18 ft. high, were hoisted into place by means of an inside scaffolding and an outside rig. Forms were built in three sections, and moved around the building progressively as each part was completed. The water table was set 18 in. above the first floor level; and since the walls were formed to their full height, a recess was made to receive the floor slab. Dowels were provided to splice with the floor reinforcement. In this way a construction joint in the walls was avoided.

The final finish was produced by removing any imperfections with a chipping gun, after which the walls were wet down and given a dash coat. After curing for four days the entire surface was machine-rubbed with carborundum grit and flushed clean with water from a hose at 30-lb. pressure. Final treatment was two coats buff portland cement paint.

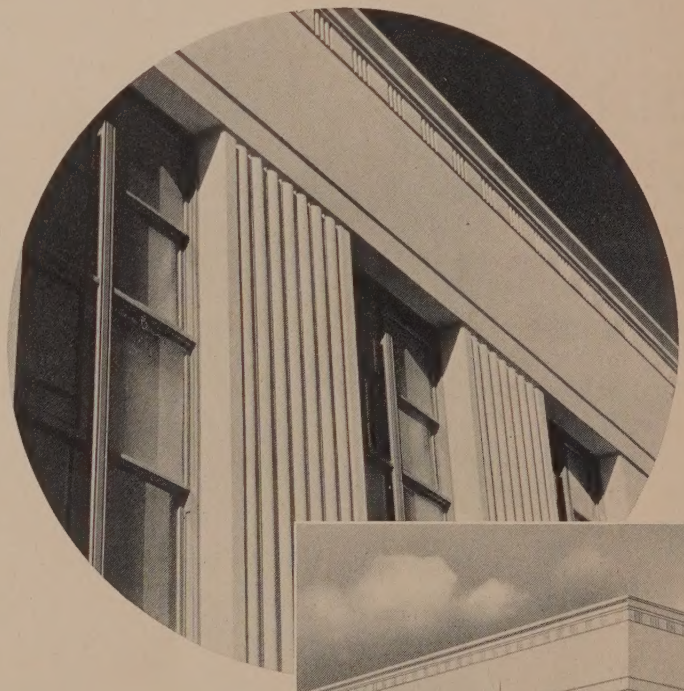
Work started in August, 1937, and was completed the following June at a cost of $65,000, including equipment. The building was designed by the Procurement Division, Treasury Department. Mutual Construction Co. of New York was the contractor. A sculptural relief motif portraying "Postmen Through the Ages", which adorns one wall of the foyer, was executed by Maurice Glickman of New York, N. Y.

A Gallery of U. S. Post Offices in Architectural Concrete

AMONG the many new post office buildings erected through the nation during the past few years, scores have been executed in architectural concrete. They have no set style—for almost everywhere these buildings have been designed to fit the architecture and traditions of the communities in which they have been built. Modern, mission, classic—each style has required a different method of forming and finishing. On these pages are a few of these new post office buildings. They are typical of the wide variety of designs and finishes that have been given to these distinctive structures.

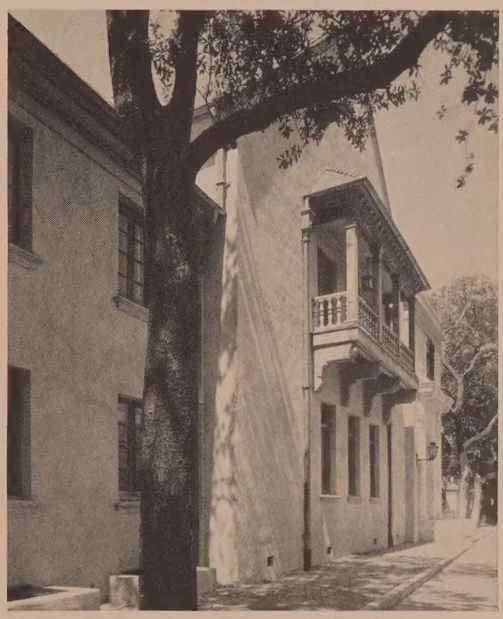
Martinez (Calif.) Post Office was completed in 1938 at a cost of $70,000. Walls were cast against plywood with the 48 stars in the coping precast and set into the forms. Designed by the Procurement Division, Treasury Department; George Peterson, San Leandro, was the contractor.

The Spanish influence is seen in the design of the Watsonville (Calif.) Post Office built in 1937 at a cost of $86,000. Formed against wide boards the base is painted brown, the upper portions white. The balcony is carried on concrete cantilever joists. Lorimer Rich, New York, N. Y., was the architect and Carl N. Swenson, Santa Jose, was the contractor.



Johnson and Wallwork were architects for the classic Marshfield (Oregon) Post Office built in 1936 by Hoffman Construction Co. of Portland. Finely molded fluting features this building.

The Post Office at Luling, Texas, a modern architectural concrete building designed by the Procurement Division, was built in 1936 by Algernon Blair of Montgomery, Ala. It has a buff stucco finish.



In 1936 an architectural concrete addition was built onto the St. Augustine (Fla.) Post Office which was originally the Spanish governor's mansion. The architectural style follows the older structure and the walls are finished in a rough-textured stucco. M. C. Greeley, Jacksonville, was the architect and James I. Barnes, Springfield, Ohio, was the general contractor.

The Ogallala (Nebr.) Post Office, built in 1938 at a cost of $45,288, was erected by Beckenhauer Bros., contractor of Norfolk, Nebr. Designed by Procurement Division, Treasury Department.

One of the many concrete buildings in Salinas, Calif., is the Post Office, built in 1937 by Frank J. Reilly Co. It was designed by the Procurement Division.

One of two new concrete power plants in Iowa is this splendid structure at Hampton, erected in 1938 to serve rural cooperative associations. Designed by Stanley Engineering Co., it was built by Welden Bros., contractor.

Iowa Power Plants—in Concrete

By C. M. Stanley*

ARCHITECTURAL concrete buildings have been used for two recently completed power plants serving rural electric transmission lines in the state of Iowa. These plants generate electrical energy for a widespread system of transmission lines serving more than 8,000 farm customers in the counties surrounding them. Built through loans from the Rural Electrification Administration, they are owned and operated by cooperative associations. The entire output of the plants is delivered to other cooperative groups which own and operate distribution systems. The two plants, located 75 miles apart, are interconnected by electric lines.

One of the plants, that of the Central Electric Federated Cooperative Association, located near Pocahontas has a capacity of 2,750 h.p. using three diesel engines. The other, owned by Federated Cooperative Power Association, at Hampton, has 3,250 h.p. in three diesels. Both plants have space for additional power units when they are needed.

In the design of plants of this type, the arrangement and layout of mechanical and electrical equipment is of primary

Interior of the Pocahontas, Iowa, power plant, showing exposed concrete walls and floors.

*Stanley Engineering Co.

importance and the enclosing structure must be adapted to requirements of the equipment. The following general requirements applied to both buildings:

1. A large engine room for generating equipment with a floor to roof height of 30 ft.

2. Adequate space for auxiliary equipment such as pumps, waste heat boilers, compressor and tanks and lubricating equipment, which may be located either in the basement or in a separate room on the main floor.

3. An electrical control room on main floor level adjacent to the engine room, with floor to roof height of at least 12 ft.

4. Space for office, wash room and store room, also with 12-ft. clearance.

The general arrangement of the building is determined by the grouping of these different parts of the plant. It is apparent, therefore, that the architectural design must deal with several rectangular shaped blocks representing various portions of the structure, and should arrive at a treatment in accord with functional requirements.

Use of architectural concrete for these two power plants has provided rugged, substantial-appearing structures which are attractive, yet plain and simple and well suited to the functions of the plants. Since both buildings are located in rural areas outside of corporate limits of nearby communities, there was no need for them to harmonize with existing structures. Architectural treatment was obtained by arranging the different functional units for pleasing contrast of masses.

Treatment of the plain surfaces of the exterior walls is very simple. The effect of pilasters is created between windows by the use of indented flutes which terminate at the construction joint at the top of the windows. All horizontal construction joints are accentuated by a V-shaped notch which serves to conceal the joints. Ornamental devices depicting a bolt of lightning within a circle relieve the plain surfaces of the deep parapet wall above the windows and symbolize the purpose of the structures.

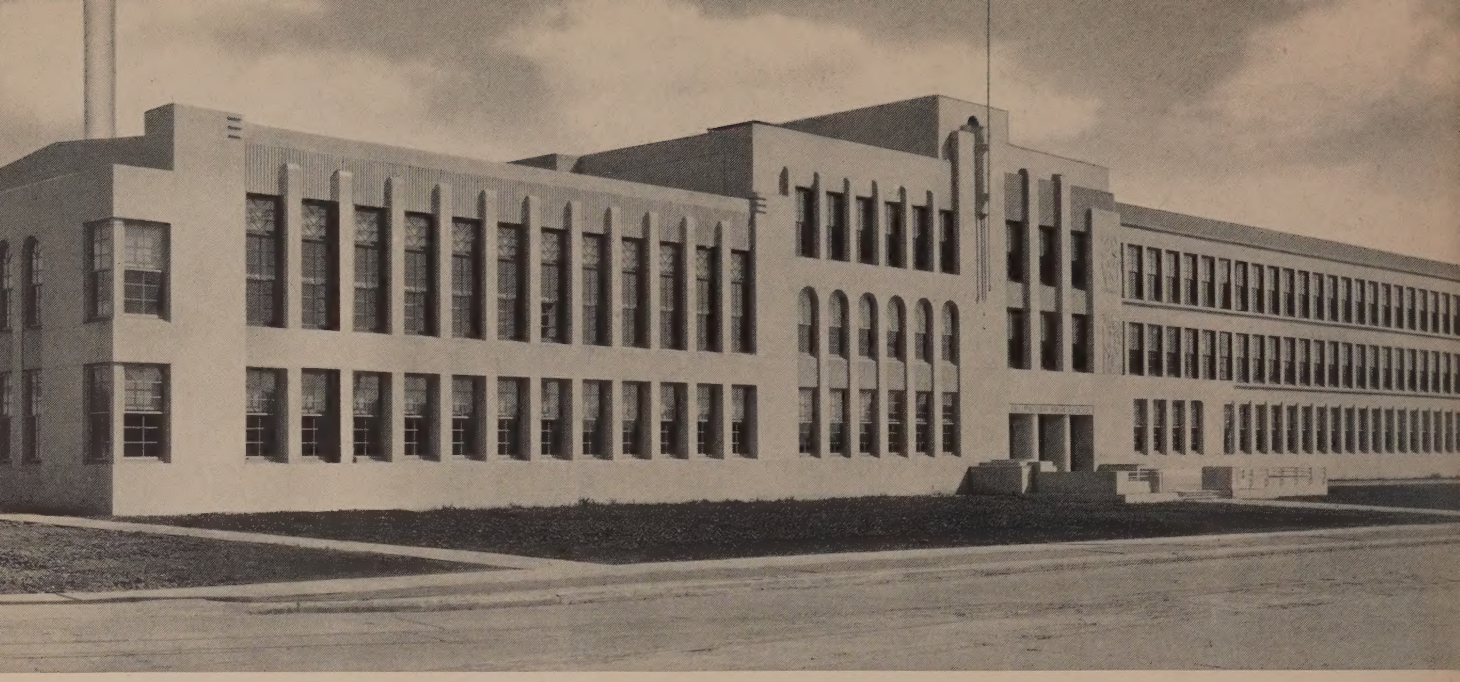
Concrete for the high walls of the engine room was cast in three lifts of about 10 ft. each. The lower two lifts are 12 in. thick, the upper lift 10 in. thick. Walls of the one-story units have 8-in. thickness and were formed in two lifts of about 6 ft. each. Reinforcement for the 12 and 10-in. walls comprises two mats using $\frac{3}{8}$-in. round bars. Vertical bars are 12 in. on centers and horizontal bars are 8 in. on centers and staggered. In the 8-in. walls reinforcement is in a single mat with vertical bars on 8-in. centers and horizontal bars at 6 in. Special reinforcement was used at all openings. Vertical joints were provided only at the corners and are sealed by copper strips.

Close control was exercised at all times to maintain a uniform mix, and vibrators were used in the placing of all concrete.

No attempt was made to surface either the exterior or the interior of the walls, hence the finish is that of the forms used which, in the case of the Hampton plant was plywood, and for the Pocahontas plant, steel. After the walls were completed, grout was used to fill small imperfections. When the grout dried, excess material was removed with burlap.

Both plants were designed and supervised by Stanley Engineering Co. of Muscatine, Iowa. Welden Bros. was contractor on the Hampton plant, and Wickes Engineering & Construction Co. built the Pocahontas structure.

Wickes Engineering & Construction Co. was builder of the Pocahontas, Iowa, building which was also designed by Stanley Engineering Co. Forms used for the walls were steel.



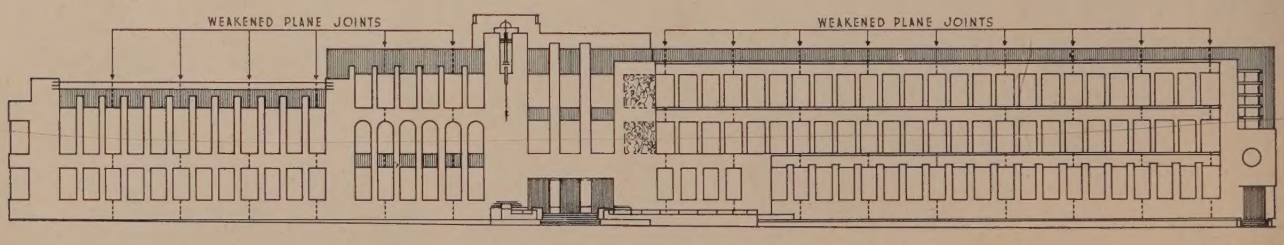
Probably the first important building in the United States in which weakened plane joints were used is Bellingham (Wash.) High School. Floyd A. Naramore, F.A.I.A., was the architect, A. M. Young, structural engineer, and Hendrickson-Alstrom Co., contractor—all of Seattle.

Weakened Plane Joints in Bellingham School

By Floyd A. Naramore, F.A.I.A.

THE new high school at Bellingham, Wash., dedicated about a year ago, is a modern, completely equipped building designed to accommodate 1,800 students. It provides for the city's present needs, and will permit considerable future expansion. It represents an earnest effort both in planning and building to realize the utmost return from the available construction funds. A rather large structure, it is divided into three sections—the long front portion used for administration, academic and scientific purposes; the central portion for auditorium and gymnasium; and the rear for shops, laboratories and workrooms. Within the group are 45 classrooms, library, study hall, lunch room and kitchen, and other modern school facilities.

As an architectural concrete building, it has several features of interest. It is probably the first building in which weakened plane joints for the control of cracks were employed extensively—and with highly successful results. The large auditorium balcony was built entirely of reinforced concrete, and has as its main structural member an unusual girder of 84 ft. 4 in. clear span. Instead of the ordinary T-shape, this girder resembles a capital E turned 90 deg. from normal position. It comprises a heavy top slab 12 ft. wide and three webs 8 ft. deep, two at the sides and the third at the center of the top slab. Numerous cross-webs or



Main facade showing location of weakened plane joints.

ing in mind, the joints were adopted for Bellingham School.

The exterior grooves were formed by making a continuous cut in the form boards ¼ in. wide, through which a folded

Major portion of the decorative detail used on the building was centered at the main entrance. Two curved bas-relief panels cast in plaster molds depict phases of modern education and culture. Note the vertical line of the weakened plane joint in the wall to the right of the molded panels.

sheet of metal was inserted to form a slot to a depth of 1½ in. in the wall. Directly opposite, on the inner face, a 1-in. wood strip was embedded in the concrete. The 9-in. wall thickness was thus reduced to 6½ in. by the two grooves. As an additional precaution, perhaps not needed, one-half of the horizontal wall bars were cut at the joint after the steel was placed.

Several slot forms were tried during the work with successively improved results. At first a rather heavy galvanized sheet was used, bent into a T-form with the folded stem penetrating the concrete and the flanges overlaying the form boards on the outside. Due to a slight enlargement of the fold at the bottom of the stem, and due to the galvanized surfaces, these strips held tightly in place and were difficult to remove. Two strips of light metal bent in angle form and capped at the bottom of the stem with a third strip folded on itself were then tried successfully. The two angle-shaped pieces were easily withdrawn while the little folded strip remained embedded in the concrete at the bottom of the groove. Where fluting occurred in the parapet beam, a slightly beveled wood strip, oiled, was made to form the grooves which came at the bottom of the flutes. A thin black metal sheet, folded in T-form and held in shape by a beveled wood filler, developed at Montebello, Calif.*, which has been used on some of the writer's subsequent work, appears to be the simplest slot form yet devised.

It is necessary to have the slot forms pass through the main wall forms in order to maintain the same surface textures at the edges of the slot as appear elsewhere on the wall. Before the building was given its final color coat, the grooves were filled with a plastic compound.

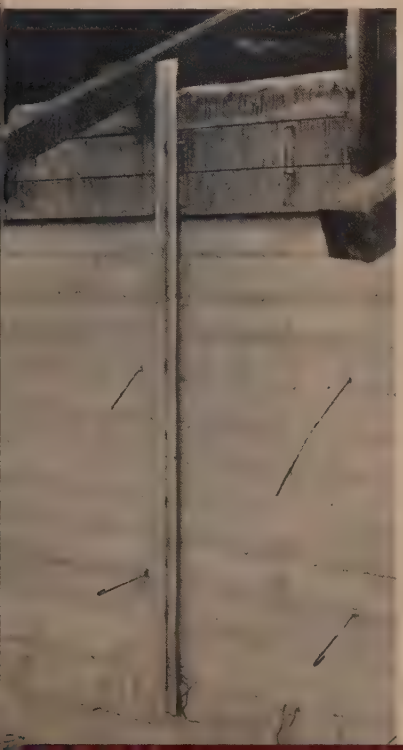
One of the plaster waste molds in place with reinforcement and inside forms being erected.

That fine hair cracks have formed at each of these joints has been determined. Yet, accompanying photographs show how inconspicuous the joints are. We feel it is much better to have neat, straight, unobtrusive lines in concrete surfaces than haphazard lines—if cracks are to occur. This method of control has now become standard practice with the writer.

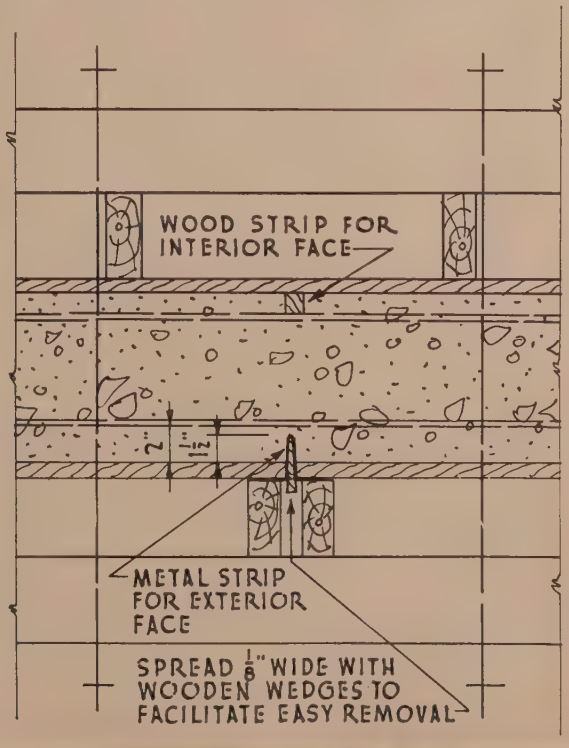
A. M. Young, of Seattle, prepared the structural design of the building, which was constructed by Hendrickson-Alstrom Co., also of that city.

*See "Experience with Weakened Plane Joints", by William T. Wright, ARCHITECTURAL CONCRETE, Vol. 5, No. 2, p. 7.

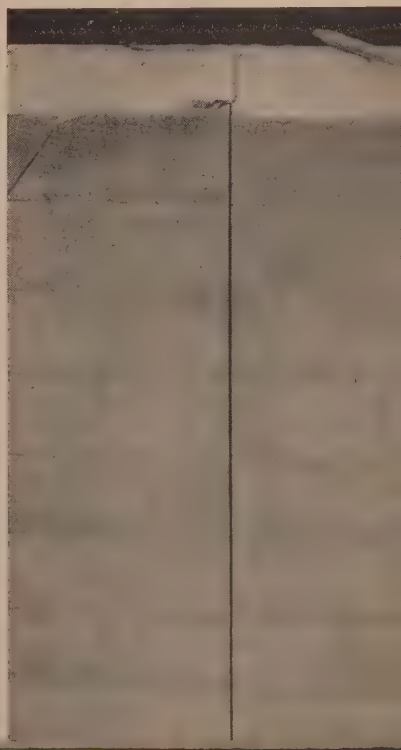
Folded metal strip was used for making the slot in the outer wall surface for weakened plane joints.

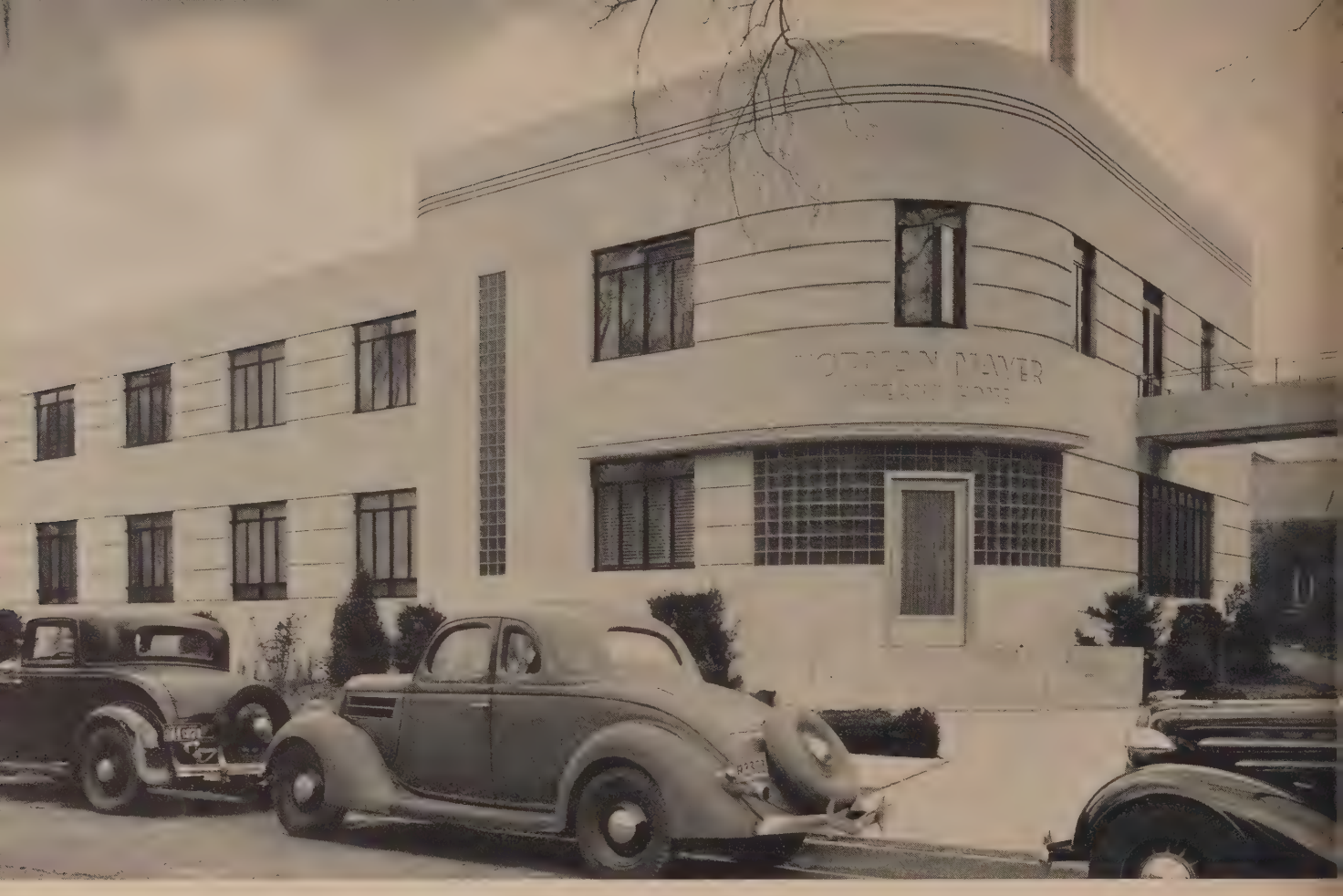


Slot in outside of wall and wood strip in inside reduce wall thickness and create a controlled vertical crack.



Finished joint is a narrow, unobjectionable vertical line filled with non-staining calking compound.





Norman Mayer Interns' Home is an adjunct of Turo Infirmary, New Orleans. Erected entirely of architectural concrete in simple, modern lines, it was designed by Weiss, Dreyfous and Seiferth, architects. George P. Rice was structural engineer and Perrilliat & Rickey Co. was contractor.

An Interns' Home in New Orleans

By F. Julius Dreyfous*, A.I.A.

ARCHITECTURAL concrete was the architects' answer to the doctors' prayers in the erection of the Norman Mayer Interns' Home, a modern structure with facilities for housing forty interns and one senior house physician. The building stands in the rear of the Turo Infirmary, New Orleans, with a bridge connecting the home's second floor with the second floor of the main hospital.

*Weiss, Dreyfous and Seiferth, Architects.

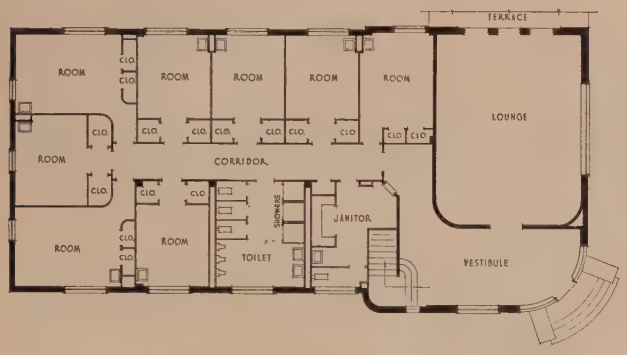
Funds for the building were donated by Mrs. Norman Mayer in memory of her late husband, whose likeness is cast on a bronze plaque placed in the entrance hall. The home was completed during November of 1938 at a cost of $60,000.

Any unit of a modern hospital plant should be, of course, a functional building without waste space or unnecessary ornament; economical, because of the low maintenance cost

and durability of the construction material; and attractive, because of the comfort, cleanliness and beauty inherent in its design.

Past experience of the architects in the use of architectural concrete in such buildings as the Louisiana Creamery and the Louisiana State University Stadium in Baton Rouge, and the Ambulance, Service and Laundry buildings of Charity Hospital in New Orleans, influenced them in their belief that this was the material which met the required specifications.

The floor system is of concrete beam and joist construction. The building rests on a wood pile foundation, the piles being driven to a depth of 47 ft. below level of the site, and capped with reinforced concrete. All exterior forms were made of $\frac{5}{8}$-in. plywood. Concrete used for all structural work throughout the building was designed for 2,500 and 3,000-lb. ultimate strength. Concrete floors in bedrooms and halls are finished with asphalt tile, while those in toilet and shower rooms are ceramic tile over concrete.



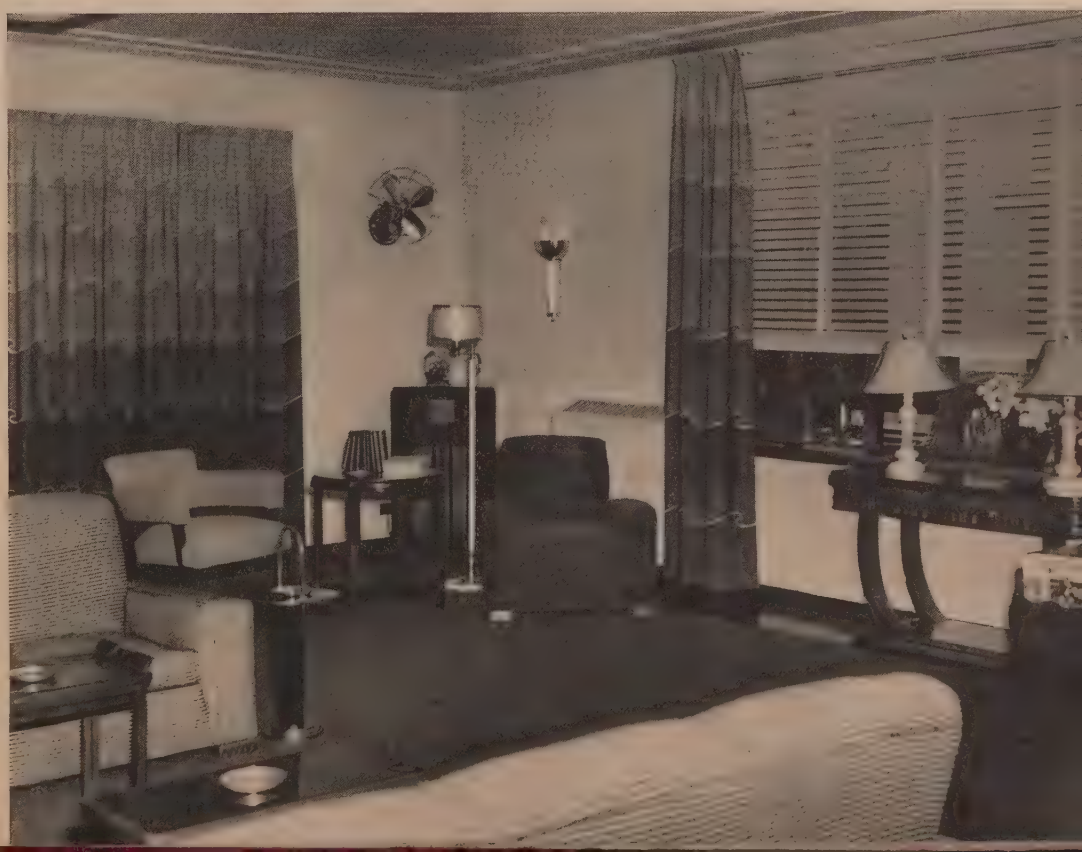
An important detail taken into consideration was the possibility that the building would be affected by the semi-tropical dampness of New Orleans. Accordingly, the inside surfaces of the exterior walls were furred with $\frac{3}{4}$-in. channels and metal lath to provide air-space between the plaster and walls, thus eliminating condensation.

Entrance steps are of cast stone with the entry, inner stairs and living room floor of terrazzo. The mantel in the living room is of highly burnished black terrazzo which gives the appearance of granite. There is a composition roof laid over the concrete deck with $\frac{1}{2}$ in. of insulating board between slab and roofing. All sheet metal work is copper.

The exterior design of the building is strictly modern—but not "moderne". Concrete was left unpainted because of its natural, pleasing color. Plaster molds were used to form the inscription over the main doorway which is the sole ornamentation to the exterior. Added interest was given to the walls through the use of rustication lines between windows which also made convenient locations for construction joints. Translucent glass bricks were used to illuminate and beautify the stair hall and entrance.

Completed and now in use, the Interns' Home seemingly has fulfilled all requirements, if, as the old saying goes: "the proof of the pudding is in the eating." The satisfaction of the hospital board, the donor, and the interns who are living in it, makes the architects feel that their selection of design and construction material was wise.

Structural design for the building was prepared by George P. Rice of New Orleans, and general contractor was Perrilliat & Rickey Co.



The living rooms and lounges are simply decorated to suit masculine tastes and ideas of comfort. The building was erected and furnished at a cost of $60,000.

Architectural CONCRETE

ARCHITECT · ENGINEER · CONTRACTOR

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World of Tomorrow Designed for Concrete

IF some genii were to translate the buildings of the San Francisco and New York World Fairs into permanent structures, he would have to do it in concrete. For it is quite apparent that neither the appearance nor the structure of those modern buildings could be achieved permanently in any other material or combination of materials.

They are not concrete—except for two or three airport buildings at San Francisco—and were never intended to be: but their lines are, and so are their textures, their sweeping, broad surfaces, and those novel structural shapes that foretell "things to come".

Given splendid freedom to design and build full scale models, the architects of those buildings created visible substance out of their dreams for tomorrow. But, if they ever want those buildings in durable material instead of flimsy expositional skin stretched over frames—they can have them in concrete, for there is no shape or form at either Fair that cannot be executed practically and economically in concrete.

If the genii turned the Fair buildings into permanent structures, it would be a mighty piece of black magic; but by ordinary concrete construction methods it would be no trick at all.

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BATHHOUSES

CAPACITIES and facilities of swimming pools and bathhouses depend considerably upon operation, local customs and demands. However, there are a few general rules as guides for design under average conditions.

The bathhouses shown here are designed for pools 30x75, 40x100 and 60x150. The maximum number of persons assumed within the pool enclosure (pool and walks) at any one time for these pools is 190, 340 and 750 respectively. The proportion of men to women, while varying considerably, has been assumed as two to one. Checking facilities should be available for a somewhat greater number than will actually be in the pool area at one time.

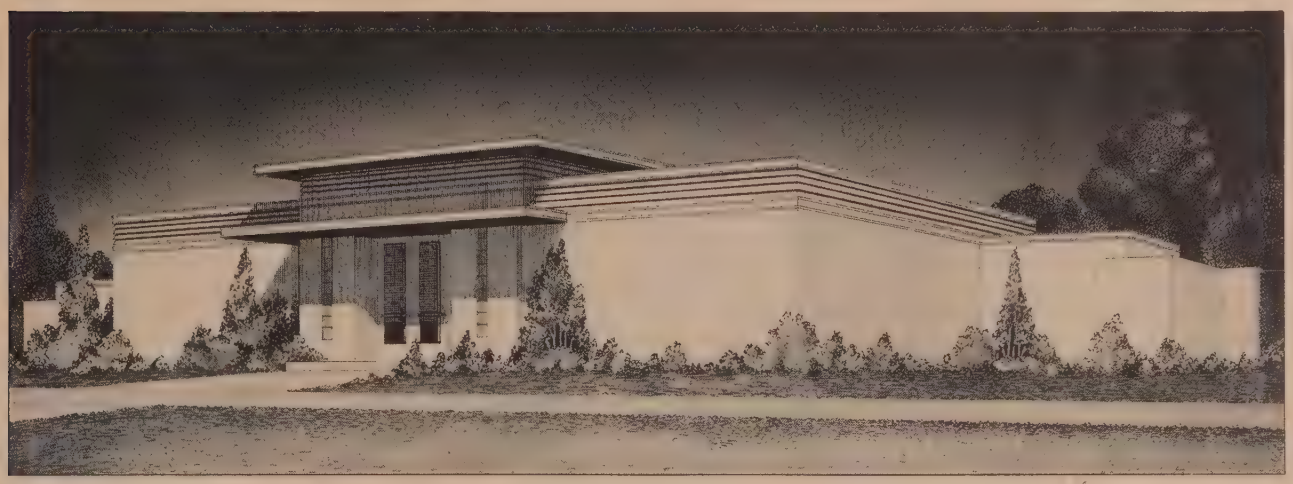
Dressing areas will not differ greatly for men and women since the private dressing rooms, which must be provided for part of the women, require more area per bather than the dormitory system used for the men.

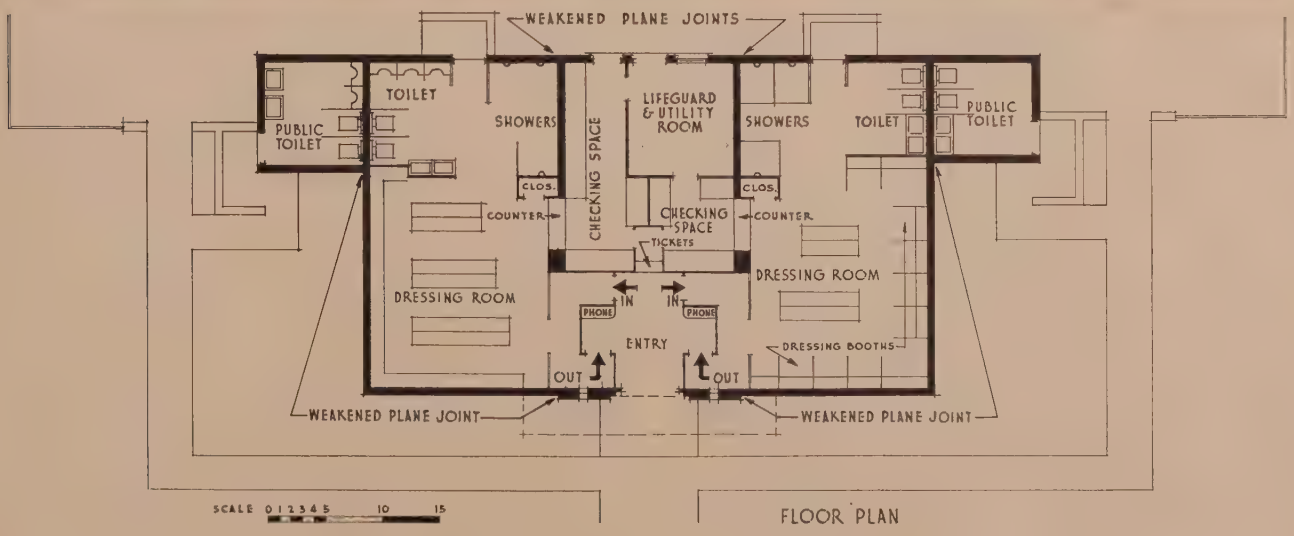
A bathhouse should be arranged for efficient operation with a limited personnel when there are few patrons and with a larger number of employes during busy periods.

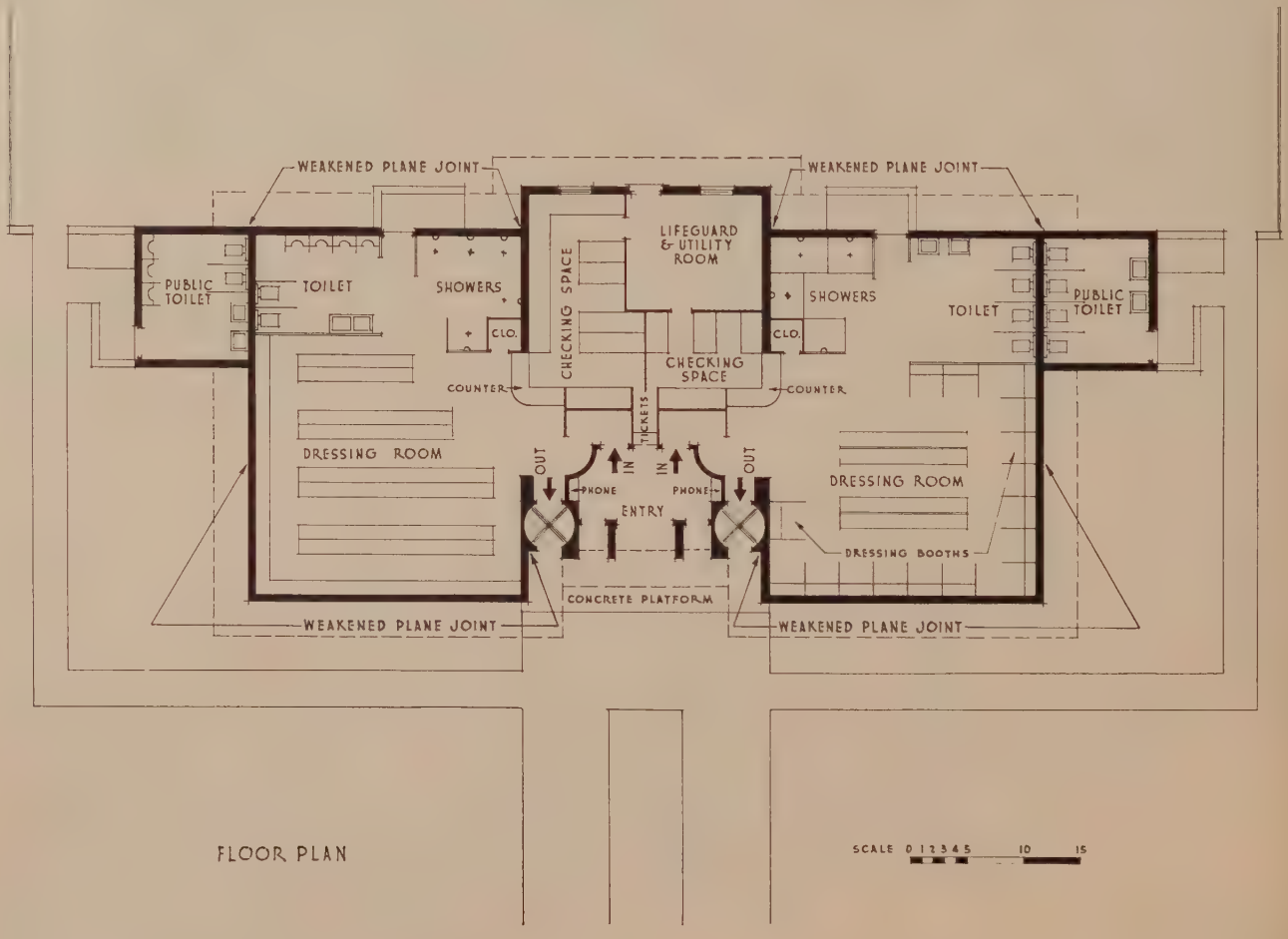
Facilities should be arranged to avoid confusion between incoming and outgoing bathers. The route from the dressing room to the pool should be past the showers and toilets. The latter should be accessible from the pool without passing through the dressing area, and in larger bathhouses separate "dry" toilets for patrons in street clothes are desirable. Separate facilities must be provided for spectators.

Adequate ventilation is important. Louvered openings backed with mesh are satisfactory. Frequently the check room has extra height to improve ventilation in that area. The open-court type of bathhouse in which the roof is omitted over the major portion of the dressing area has been quite satisfactory in the larger developments.

The floor should be pitched about ¼ in. per ft. to outlets so it can be washed with a hose and will dry rapidly.







FLOOR PLAN

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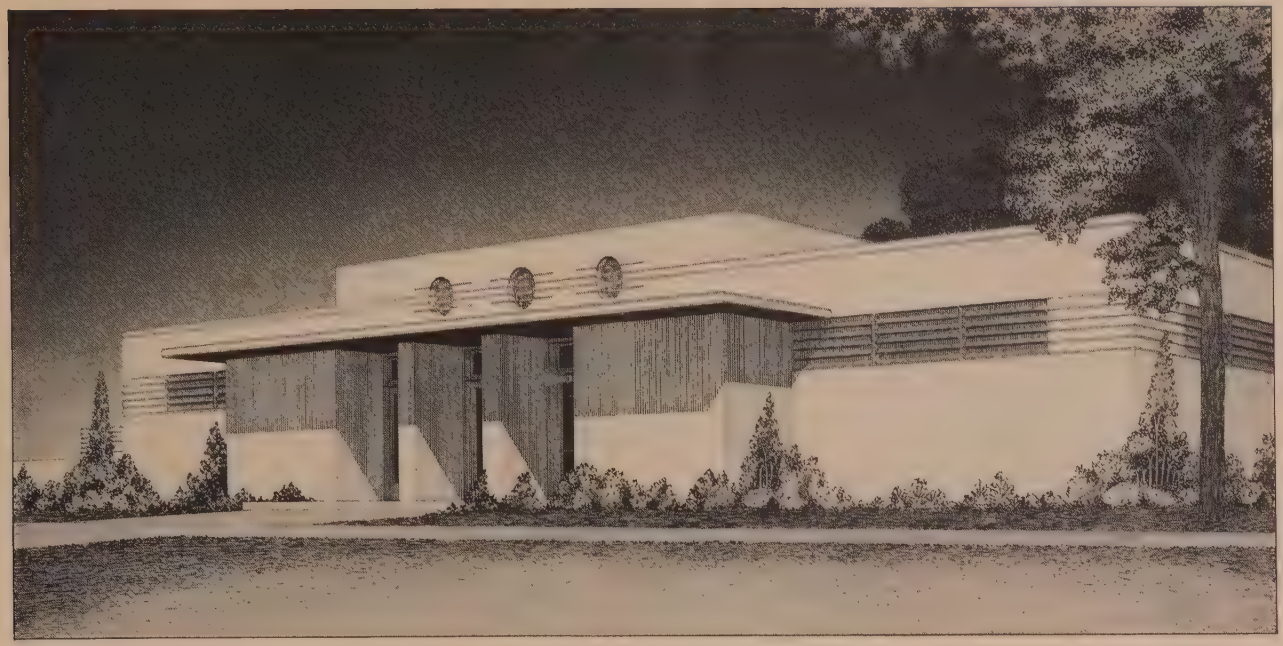

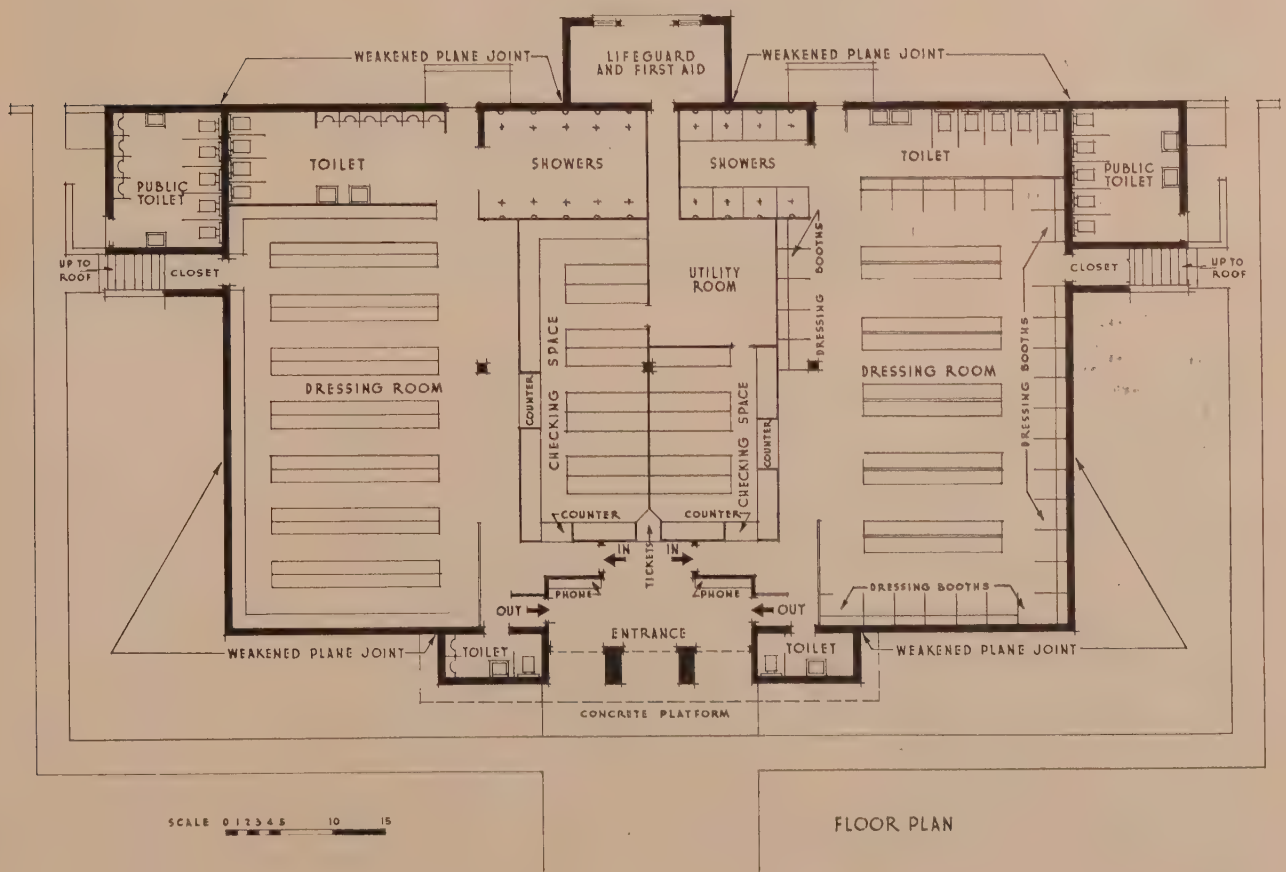
WEAKENED PLANE JOINT
LIFEGUARD AND FIRST AID
WEAKENED PLANE JOINT
PUBLIC TOILET
TOILET
SHOWERS
SHOWERS
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UP TO ROOF
CLOSET
UTILITY ROOM
DRESSING BOOTHS
CLOSET
UP TO ROOF
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CHECKING SPACE
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ENTRANCE
WEAKENED PLANE JOINT
TOILET
TOILET
WEAKENED PLANE JOINT
CONCRETE PLATFORM
SCALE 0 1 2 3 4 5 10 15

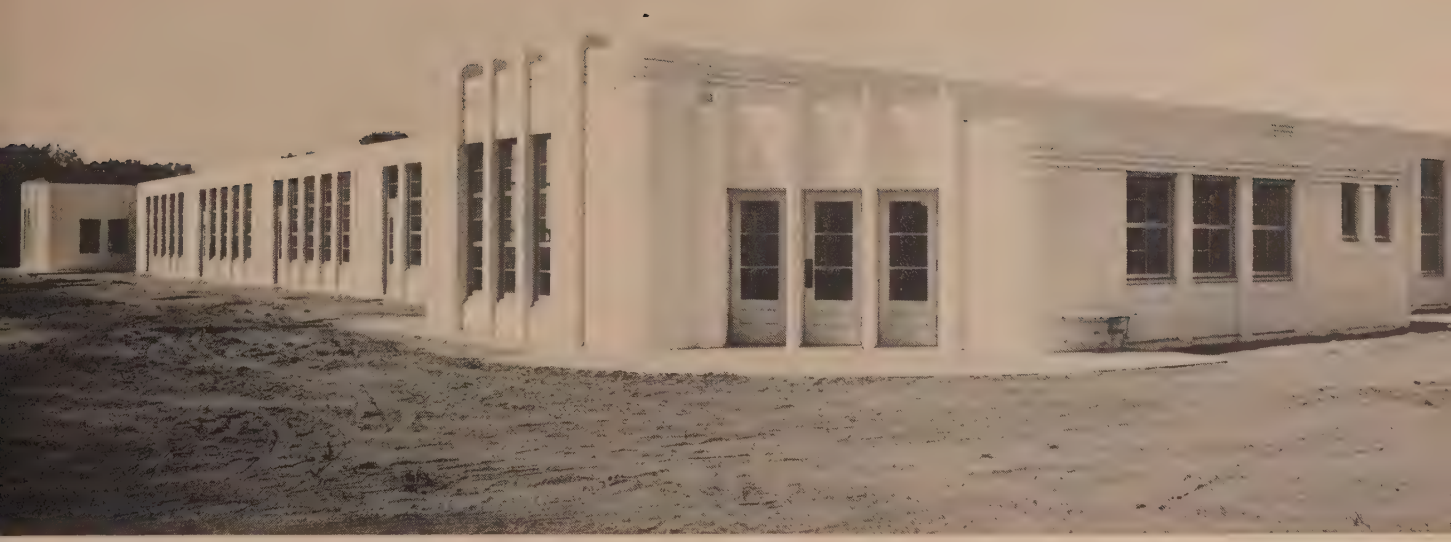
FLOOR PLAN

BATHHOUSE
DECORAH, IOWA
CHARLES ALTFILLISCH
ARCHITECT
BUILT BY W.P.A.

BATHHOUSE
WELLINGTON, KANSAS
WM. N. CATON, ARCHITECT
PAULETTE AND WILSON, ENGRS.
BUILT BY W.P.A.

BATHHOUSE
MARSHALL, MO.
PERKINS LABORATORIES
DESIGNERS
BUILT BY W.P.A.

Published by PORTLAND CEMENT ASSOCIATION • 33 WEST GRAND AVENUE • CHICAGO



Cherry Lee School, one of two identical schools built for the El Monte School District, San Bernardino County, Calif. The other building is Protrero School. Now being completed, the structures were designed by Worswick and Culver, architects. The same construction crews and forms were used interchangeably for the two buildings throughout construction.

Concrete Details for Modern Schools

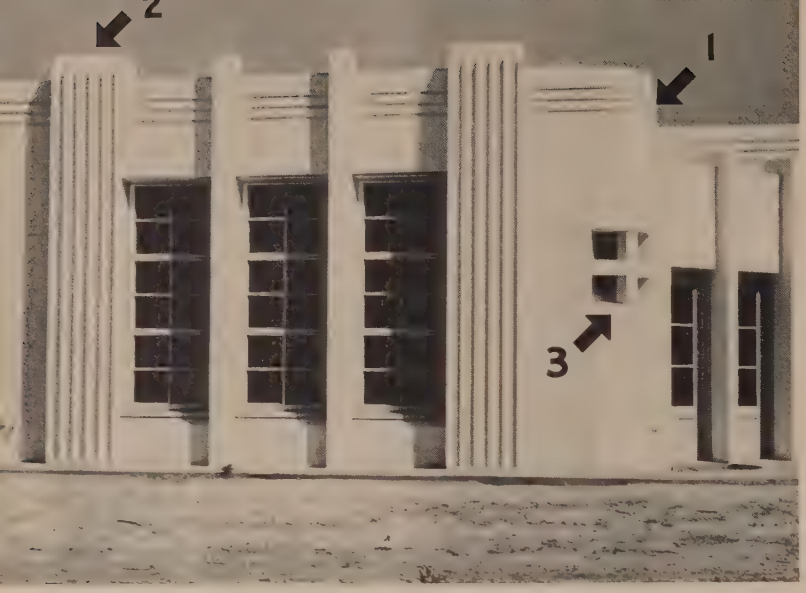
By Walter L. Culver, Jr.*

WHEN the board of trustees of the El Monte School District, Calif., were faced with the necessity of building two complete elementary schools four miles apart and in opposite sections of the community, they decided to use identical plans and construction. By such duplication it was found that a saving of approximately $27,000 was possible, and in addition, work was accomplished much more rapidly since construction on the two buildings could be carried on simultaneously by the same crews of workmen.

*Worswick and Culver, Architects.

With two schools instead of one, the main problem was still the same—to provide needed housing and bring the cost within the budget allowed. The use of concrete was decided upon after estimating the cost of concrete and other types of construction. As a second item, but an important one, estimates of maintenance costs, depreciation, and insurance were made, and these estimates substantiated the decision to use concrete throughout. In arriving at a probable first cost, a study of types of forms and the possibilities for reuse indicated the type of design that would be econom-

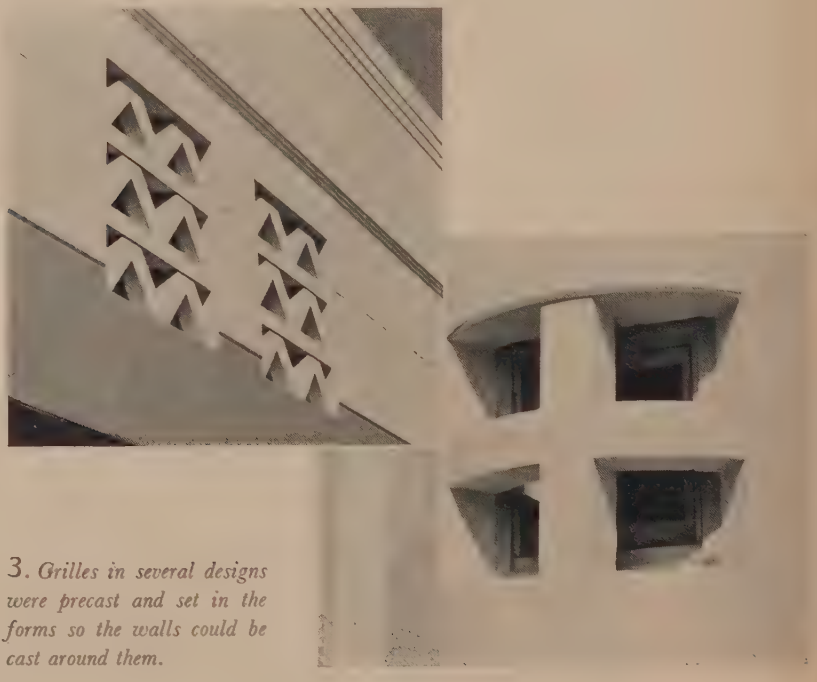
View of Cherry Lee School looking into the quadrangles formed by three wings falling back from the long front facade.



Main facade of school. Arrows point to details which are enlarged in accompanying illustrations.

1. *Where lifts of concrete ended, a V-line was introduced. This concealed the joint line and also any slight offsets that might have occurred where new forms did not come exactly flush with the previously placed concrete below. The V-lines served also as a pleasing architectural motif, especially where several of them were used in forming a band.*

2. *Fluted pilasters were formed against milled wood molds. Each of these forms was used four times.*



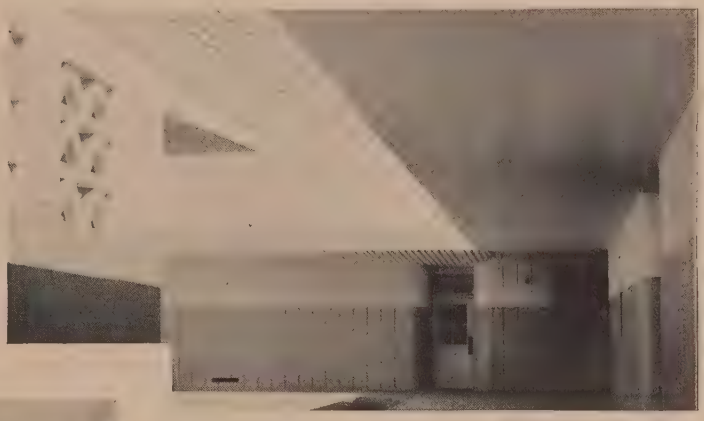
3. *Grilles in several designs were precast and set in the forms so the walls could be cast around them.*

ical. The preliminary architectural design was then modified to suit functional details. A study of practical construction methods resulted in further modification of certain details. It follows, then, that the design of the entire plant was based on predetermined details.

The buildings are designed to serve as community centers, for, in addition to the classrooms, offices, and other academic facilities, they have auditoriums seating about 500 persons. The auditoriums are convertible into cafeterias, served by large kitchens, permitting civic gatherings, P.T.A.

View inside one of quadrangles showing location of specially formed details.

4. *The vertical lines on many of the quadrangle walls were formed against 26-ga. "Tylelike" galvanized roofing—a standard and low-priced material. This was backed by 1x6 sheathing into typical sections and reused as many as 12 times. This metal was also salvaged and sold at completion of the job.*



6. *Edges of canopies were kept true and straight by setting up a base rail near the ground. This rail was accurately trued, and as concrete was deposited, deflection of forms was corrected by checking with a rod to the base rail. Shims were then driven in under the shores to raise the forms to proper level. This proved a very successful operation.*

5. *Forms used for casting the canopies which overhang all walkways were built up of 26-ga. G. I. 5½-in. pitch corrugated roofing, backed with 1x6 boards. The forms were made into panels of typical size for repeated use—about eight times each. At conclusion of the job, the corrugated metal was rerolled, salvaged, and sold at about one-third the original purchase price.*

meetings, community dinners and other affairs.

The buildings, which are E-shaped with three wings falling back from the front section, are of modern design, with white paint finish and aluminum roof. As the construction would indicate, they are substantial, rigid, and built to resist earthquake stresses; in fact, reinforced concrete meets these requirements for schools and public buildings better than any other type of construction yet devised. In each school, administrative offices and clinic are located in the main unit extending across the front, with the 10 class-

rooms occupying end wings, while the auditorium is on the central axis and divides the rear area symmetrically into two quadrangles.

Directly adjoining the buildings and forming a border about the quadrangles are exterior corridors 8 ft. wide which are protected from the weather by concrete roofs projected as cantilevers from the concrete walls. The cantilever roofs eliminate the hazards common to walkways in which there are posts.

Since the two schools were to be erected simultaneously, the structures were designed in units, and forms, together with crews, were shifted back and forth between the jobs. This permitted economical use of forms and of crews familiar with the construction. Such procedure made it quite necessary to plan forming details well in advance; and it was due to such foresight, together with careful following of instructions on the job, and splendid supervision, that such an eminently satisfactory job resulted.

Study of the details employed on these buildings will reveal that architectural necessity was not the principal dictator of their forms and lines. Some may be seen to be the result of following economical methods of producing necessary structural features; others are devices to permit simpler, more accurate forming; and still others are means of concealing construction joints. The aim was to combine all the features into pleasing modern forms and to make two identical buildings equally beautiful.

Full cooperation of school authorities in the preliminary planning, in the solution of problems of functional design and arrangement, and throughout the period of construction greatly facilitated the successful and orderly progress of the work. For this high degree of cooperation, so essential to the architect in carrying out a project of this nature, more than usual credit should be accorded the administrative head of the El Monte School District, Frank M. Wright, district superintendent.

Raceways were provided across all openings and in back of walls so that future wiring or piping could be installed without having to cut any concrete work.

A deeply incised V-line, or rustication, was provided at a level 6 ft. above grade to define the limit of the oil painted wainscot, and to provide a convenient stopping point for any future paint work. Since repainting might be done by semi-skilled painters in the employ of the school district, it was felt desirable to give them a physical line as a guide.

All classrooms were designed to have walled enclosures to provide outdoor activity space for each class. When these pictures were taken the walls were not yet constructed, which explains the rather unusual presence of outside doors for each classroom.

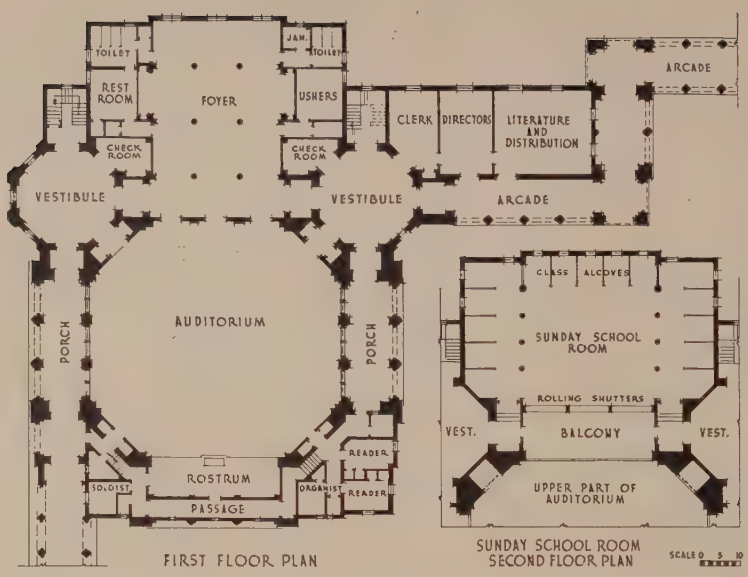
South portion of First Church of Christ, Scientist, at Santa Barbara, Calif. Using Spanish motifs characteristic of architecture of the surrounding area, it was designed by Henry H. Gutterson, architect. W. L. Snook was general contractor.

Two Churches in California

By Henry H. Gutterson, A.I.A.

CONSTRUCTION of two edifices for the First Church of Christ, Scientist, one at Santa Barbara and the other at Sacramento, provides an interesting comparison of methods employed to reach a common result under somewhat different conditions. In the first place, one of the buildings, that in Santa Barbara, was built in 1932 when building costs were generally lower than in 1939 when the Sacramento church was completed. This was important in view of the requirement for economy in construction of both buildings. Again, while both occupy corner sites, they are widely different in size and exposure. For both, however, the common aim was to produce beautiful, enduring structures, suitable to the needs of the congregations and to the surroundings in which the churches were erected.

Architectural concrete was selected as the medium in which to work out both designs, and this material was combined with tiled roofs and richly patterned, leaded glass



Floor plans of the Santa Barbara Church.

for lectures. Administration, literature and primary classrooms are in a wing.

The much smaller site at Sacramento dictated the Sunday school on the ground level under the church auditorium with ample stairs between upper and lower foyers, and an elevator for special needs. The plain concrete walls, finished with off-white waterproof cement brush coats, are so designed as to enhance the tracery and shadows from the surrounding elm trees.

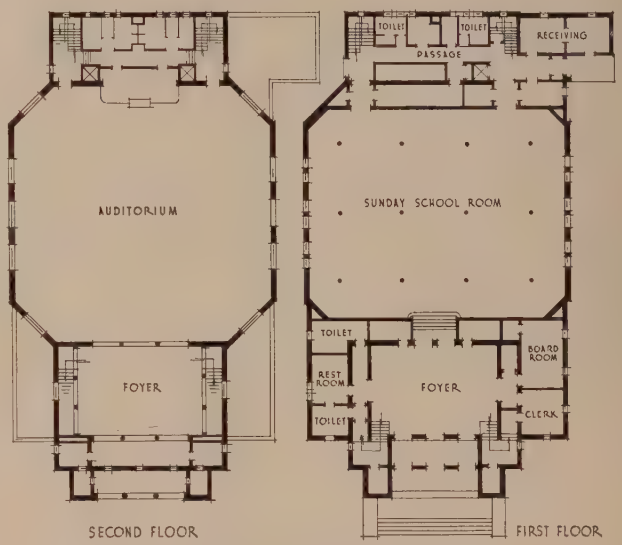
Both churches are designed to resist earthquake forces, with steel and reinforced concrete frames and 8-in. thick concrete exterior walls, furred inside with simple plaster finish.

In both cases forms were 1x6-in. T&G fir. All exterior ornament was cast in place using waste molds. So fine was the craftsmanship employed

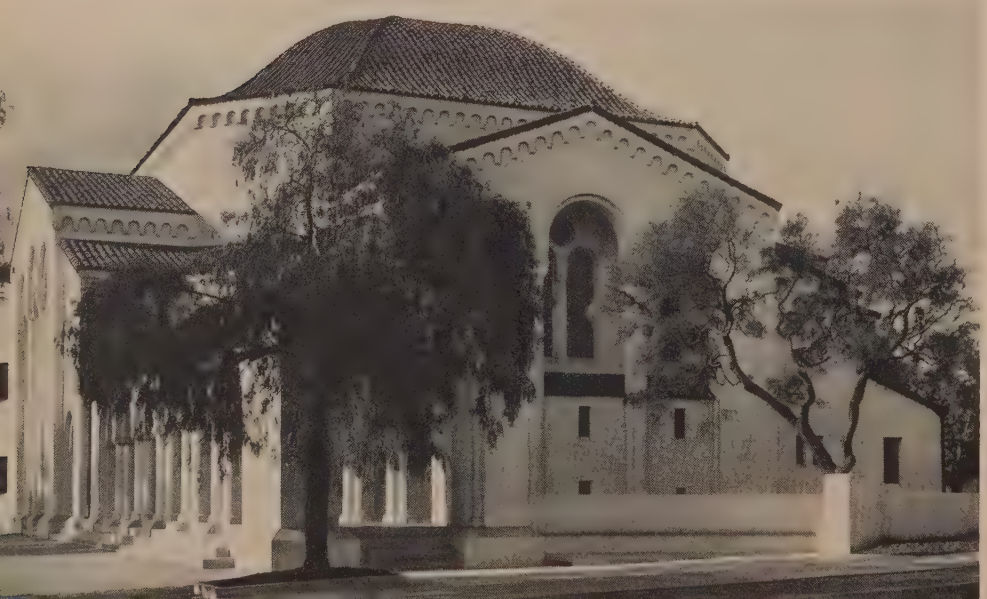
windows to produce effects of lasting value.

The projects in each case called for auditoriums with fixed seating, suitable for the simple church services including testimonials from the congregations; ample foyers, with offices, literature and rest rooms connecting; large Sunday school rooms with class teaching facilities, and various committee rooms. Special arrangements were desired for lectures to larger gatherings in which both the church and Sunday school seating facilities could be combined for use with microphones and amplifiers.

In Santa Barbara, an unusually spacious site facing north and west prompted a plan with arcaded porches and automobile parking areas. Entrance doors and foyers were so placed as to face the congregation toward the rostrum near the north front to insure good lighting. Street facades were thus set in a walled garden. The Sunday school auditorium on the balcony level is arranged to open into the church



Floor plans for the Sacramento Church.



Because the Santa Barbara site was unusually spacious, the plan allowed arcaded porches and auto parking areas which could not be incorporated in the design of the Sacramento structure.

First Church of Christ, Scientist, in Sacramento, is another design by Architect Gutterson. The space and use requirements were similar to those of the Santa Barbara church, but site and other conditions were different, hence a more compact design solved the problem. C. J. Hopkinson was general contractor for this building.

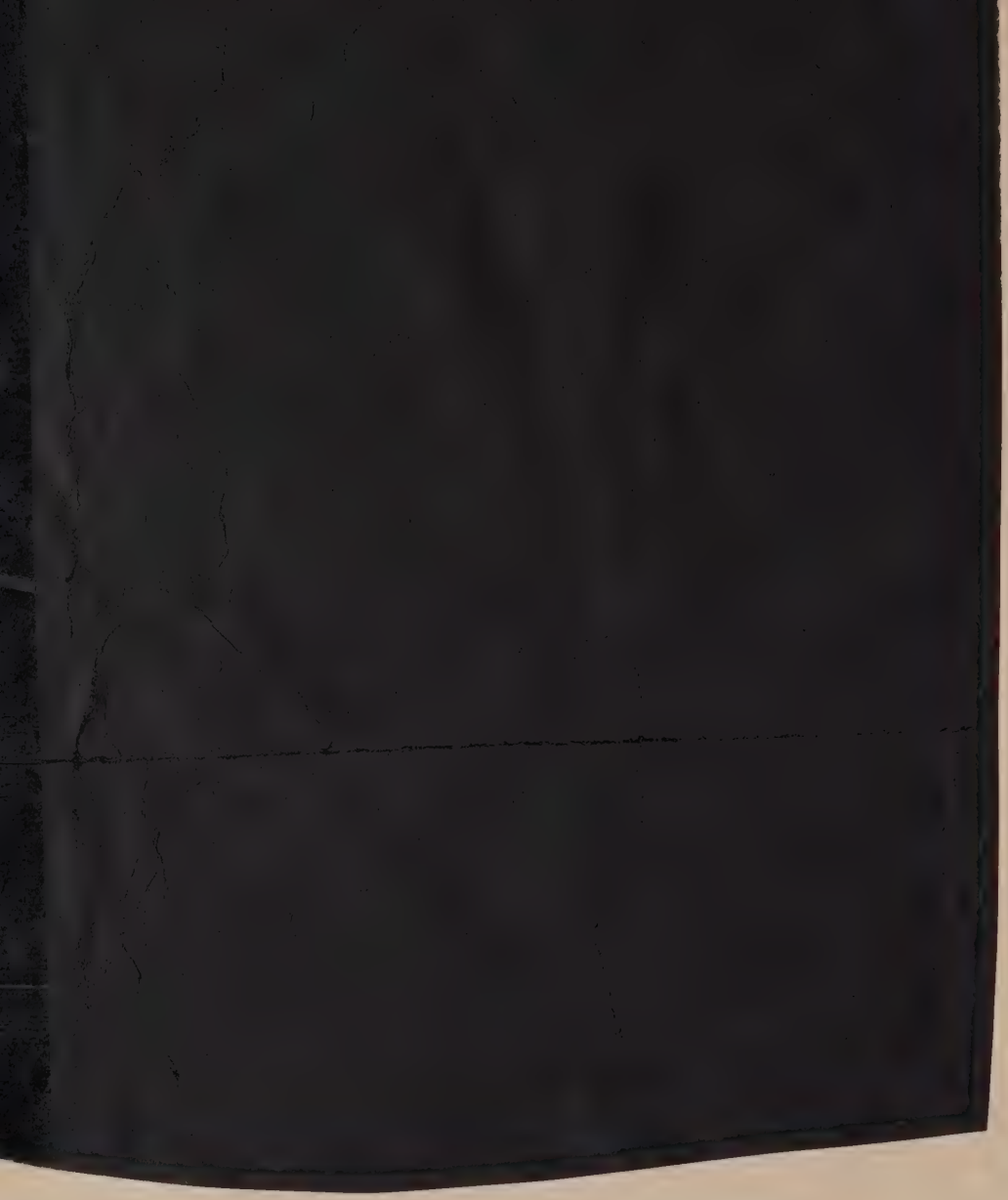
that only minor patching and removal of fins was necessary after stripping to produce satisfactory surfaces in both buildings.

Experience with architectural concrete construction for more than a decade has proved that exposed concrete, brush-coated for uniformity of color, is relatively inexpensive; that it withstands weathering admirably; and that it insures most economical maintenance.

Contract cost of the Santa Barbara church, exclusive of organ—in 1932—was $122,762, or $5 per sq.ft. of floor area, or $173 per auditorium seat.

Contract cost of the Sacramento church, on the same basis but in 1939, was $138,722 or $7.26 per sq.ft. and $190 per auditorium seat.

Walter L. Huber of San Francisco was the structural engineer for both buildings. W. L. Snook was contractor for the Santa Barbara church, and C. J. Hopkinson was general contractor for the one in Sacramento.



Main entrance to St. Joseph's Hospital, LaGrande, Oregon. The coursed effect in the walls was produced by inserting strips of wood in the form faces. The finish was made by blasting granite dust into a cement wash. Tourtellotte and Phillips, architects, and McCormack-Foley, Inc., contractor.

Hospital Group in Oregon

By J. E. Tourtellotte*

ST. JOSEPH'S Hospital, erected recently for the Sisters of St. Francis at LaGrande, Oregon, consists of five buildings divided into seven units. Four of the units are built and in use, and plans are prepared for completion of the project at some near future date.

*Tourtellotte and Phillips, Architects.

The main hospital unit is 120x50 ft. and four stories high. The convent is 60x30 ft. and two stories high. A chapel, 23x44 ft., and the two-story laundry and heater room, 25x30 ft., complete the present layout. Projected for future work are an extension which will double the number of patients' accommodations and a nurses' home.

The building group is located on a site 700 x 300 ft. overlooking the city. All the buildings are architectural concrete, and the corridor walls, which are of reinforced concrete as well as the exterior walls, are bearing walls, making the use of solid slab floors simple and inexpensive.

All floors are finished with terrazzo, thereby completing the use of concrete throughout the entire group of buildings in every possible detail and providing advantages in sanitation which are so important in hospital operation.

Exterior concrete walls were formed against plywood. The forms were required to be built in such a manner

that when they were removed the finished concrete surfaces were smooth and beautiful in appearance. The coursed ashlar effect was produced by inserting narrow strips of wood on the faces of the exterior forms.

After tie rod holes were plugged, the walls were given a brush coat of portland cement. While this coat was still soft, granite sand of about the fineness of gunpowder was blasted into the surface. This sand, being fine, covered the whole area with a brilliant, white sparkling silica surface.

Three shades of sand were used to give contrast to individual areas which gives the walls the appearance and character of coursed granite. Because the brush coat was worked into the surface and the sand was blasted into the soft cement, which was then thoroughly cured, this surface glazing became integral with the structure of the building. As such it is a most durable surface treatment.

This process for finishing concrete surfaces was developed some 15 years ago and it is a pleasure to report that after periods of 10 and 15 years these surfaces have not deteriorated and are still beautiful. There has been some weathering, just as in natural stone, but the weathering simply adds beauty to the surface. In addition to the decorative quality of this type of surface treatment, it aids in resisting penetration of moisture into the concrete.

The St. Joseph's Hospital group was started in about March, 1938, and the units completed were ready for occupation in November of the same year.

McCormack-Foley, Inc., of The Dalles, Oregon, was the contractor. Cost of the project, exclusive of equipment and land, was $180,000.

J. E. Tourtellotte

1869-1939

One of the last of many big jobs that John Tourtellotte completed was St. Joseph's Hospital at LaGrande, Oregon. And one of his last acts in connection with this hospital was to sit down on April 3 and write, in his blunt, brief, straightforward manner, an article for ARCHITECTURAL CONCRETE about this hospital and his favorite method for finishing concrete surfaces. For just a little more than a month later—on May 8—he died at Portland, at the age of 70.

When we visited this pioneer architect of the Pacific Northwest less than two years ago, his enthusiasm, his plans, his hopes did not reveal that three score and ten years were creeping up to put an end to 50 years of building. In his mind there were fine structures to come: some, possibly, for the cold plains of Alaska, where he had built before; others for his own green Northwest. He was building in architectural concrete before the name came into being; he was planning others for this year and next.

Now scores of buildings—some large, some small, some magnificent; schools, courthouses, hospitals, banks and stores—dot the country he helped to build. They are monuments to John Tourtellotte—the only kind he really ever cared for.

—The Editor

The convent (left) *and main hospital are two of four completed units. A nurses' home and additional accommodation for patients will be added.*

One of two new architectural concrete warehouses built by the H. J. Heinz Co. on the West Coast, is this modern structure at Oakland, Calif. Refined "streamlining" and sound, durable construction were basic requirements. Designed by company engineering department it was built by H. K. Ferguson Co. of Cleveland, Ohio.

Two Warehouses for Heinz "57"

By C. A. Hahn*

In constructing the two new warehouses at Oakland and Los Angeles, Calif., the H. J. Heinz Co. decided to depart quite radically from its long established practice of building structures of hard burned shale brick. Reason for the change was that this company, like other successful large enterprises, must continuously keep abreast of the trend of the times, even in the building field, in order to be recognized as up-to-date and modern.

A first step in designing the two new buildings involved study of distinctive designs already done in the field of architectural concrete, and their application to industrial types of buildings. What were regarded as the best features of the commercial and industrial types of concrete structures recently completed in various parts of the country were summarized and set up as a background for the company's engineers who are regularly assigned the preparation of preliminary layouts and designs for all structures. Naturally, those features considered as not good practice, or of a "tricky" character, were put up as a warning against attempting anything spectacular.

The H. K. Ferguson Co. and The Austin Co. of Cleveland, engineer and contractor for the Oakland and Los Angeles projects, respectively, worked out the details of designs evolved by the company's engineering department.

The Los Angeles building is 233x151 ft. with a second-story section used for offices occupying a space 51x151 ft. The single-story area is used essentially as a warehouse and arranged carefully for all operations. Framing of the two-story front section is reinforced concrete while the single-story section has concrete walls and steel columns. Roof is a wood deck.

The predominating impression is one of refined streamlining without any of the bizarre effects peculiar to some

*In charge of engineering, H. J. Heinz Co.

modern designs. Horizontal emphasis due to fenestration of the wings on either side of the central entrance is lightened to the degree considered necessary by the vertical treatment of the central feature. Curved ends carry out the feeling of continuity, or flow, of design which is a fundamental of the modern trend.

At Oakland, the building is of concrete walls, steel frame and wood deck roof. This building is 212x160 ft. with a second-story office 80x50 ft. Its architectural design is somewhat suggestive of the Los Angeles building, although many details are different and the settings are quite unlike.

It was the owner's and contractor's aim to secure buildings of not only pleasing initial impression, but of low maintenance cost and long life. Pains were taken with the design and construction of both buildings to insure compactness of the concrete during placement. Special provisions were made for taking up the initial shrinkage of the concrete after each run and all concrete was placed by vibration.

Plywood forms were used, the panels being arranged systematically so the effect would be pleasing in the event the joint lines should eventually be discernible. Vertical joints in the walls were keyed to make sure that, should there be any tendency to move along the construction joints, both sides would remain in the same plane.

Additional reinforcing steel was used to minimize possibilities of shear cracks due to earthquake forces and diagonal reinforcement was used around all openings.

Forms were removed early to permit rubbing the concrete surfaces with carborundum stones. After this rubbing, the surfaces were painted with portland cement paint.

Both buildings were completed in January, 1938, and careful inspection of the concrete has revealed no cracks nor do the walls show dirt and discoloration more than would be expected of any other material and perhaps less. Experience of the past year indicates that operation cost will be appreciably lower in the Los Angeles plant than in the structure previously used in that city.

Webber and Nelson, Los Angeles, were resident engineers for the Los Angeles building while the H. J. Heinz Co. Engineering Department supervised construction of the Oakland plant.

The best features of existing architectural concrete industrial structures were incorporated in the Heinz buildings. This is the main entrance to the warehouse at Los Angeles, built by The Austin Co. of Cleveland.

Symbolizing 20th Century advances in medical practice is the modern George Eaves Clinic in Birmingham, Ala. Concrete was selected for this building because it offered so many desirable features in economical construction, safety and sanitation. Plans were prepared by Warren, Knight and Davis, architects. It was built by WPA labor.

Tuberculosis Clinic —in Birmingham

By Kenneth W. Grimley*

AS MODERN as the advanced medical practice it houses, the George Eaves Clinic of the Jefferson County Anti-Tuberculosis Association is a striking example of the beauty and practicability that can be combined in architectural concrete.

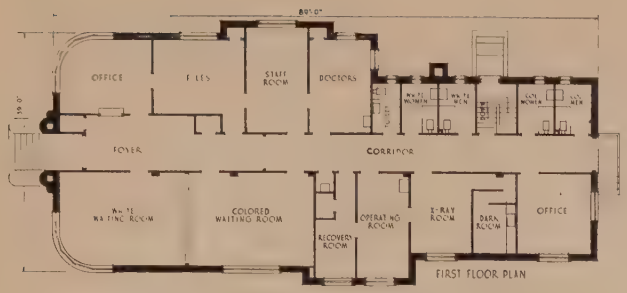
Completed in November of 1938, the building was erected through the combined efforts of Jefferson County, the city of Birmingham and the Work Projects Administration, from plans prepared by Warren, Knight and Davis, architects.

"The clinic building should express in its design modernity, symbolizing in its 20th Century construction the progress made by medical practice in this century." This, in effect, was the instruction to the architects, and this was the basic idea behind the design which is a harmonious balance of straight lines and rounded corners.

Architectural concrete was chosen because no other material or combination of materials could be found that offered so many desirable features. Masonry covered by stucco was once considered, but the idea was abandoned when a shortage of skilled labor and other obstacles to economical construction were encountered. With concrete, more men could be employed in proportion to the cost of materials, a desirable feature in view of the WPA participation, and the material, itself, proved to be a wise choice from every other standpoint.

While the design was important, the main objective in construction of a tuberculosis clinic is complete sanitary

*Executive Secretary, Jefferson County Anti-Tuberculosis Association.



The plan is compact, designed for efficient operation.

control. Here, again, concrete seemed to produce maximum advantages as well as provide for complete protection from fire, hurricane and other damage.

Abundance of light was another requirement, and the use of concrete made it structurally possible to provide large glazed areas instead of a series of smaller openings such as might have been required by other types of construction. In this building, structure and design met on a sound basis, combining steel and concrete into a frame of strength that could be expected to last far beyond the purposes of the building.

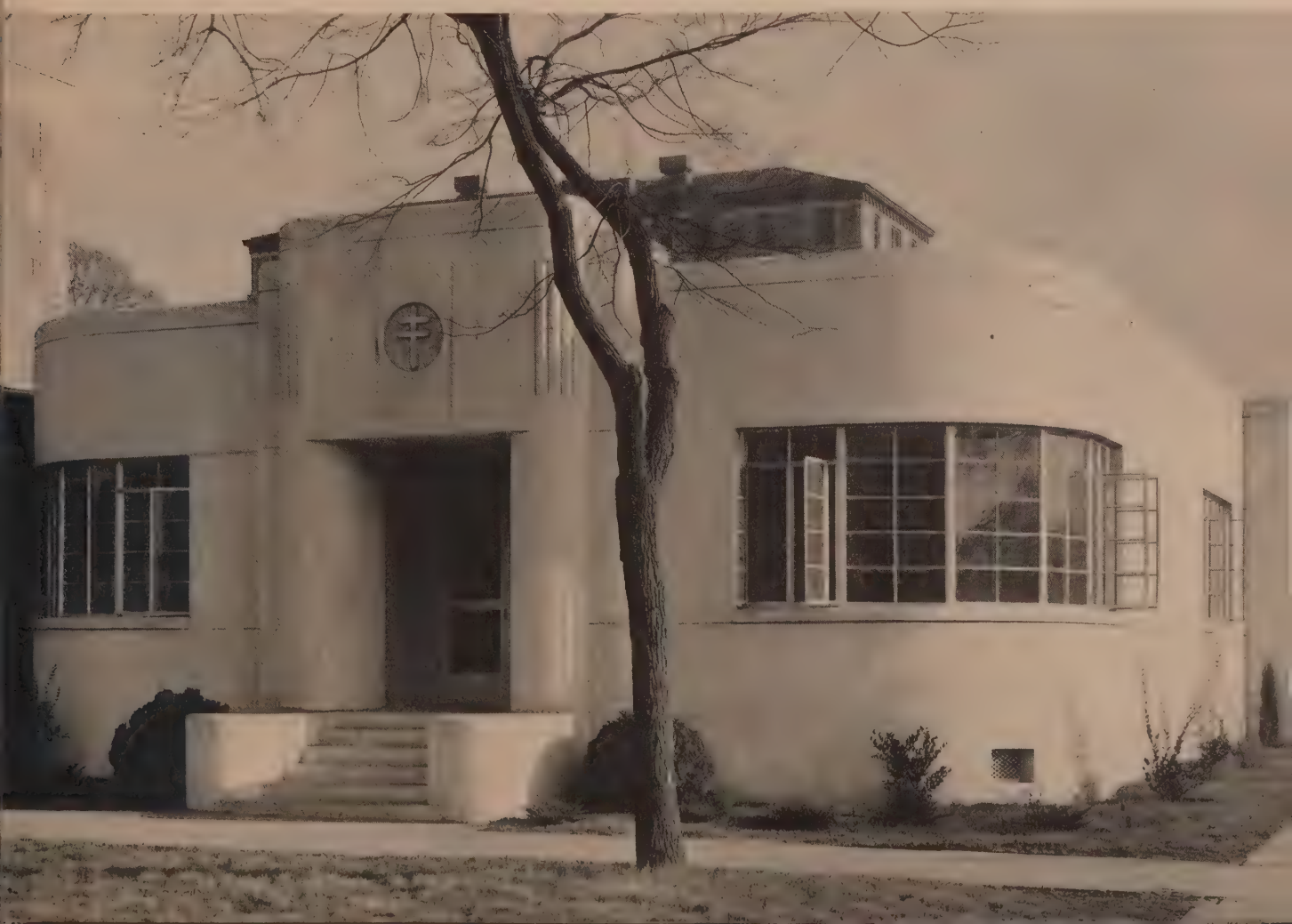
In keeping with the basic design, the decoration both inside and outside carried out a motif of simplicity, and these modest details were molded with the walls.

After removal of the forms, exterior and interior wall surfaces were rubbed down and paint was applied inside. Outer wall surfaces were left as a rubbed texture.

Since this building is dedicated to the prevention and cure of tuberculosis among the large, underprivileged groups, it was essential that every available foot of space be made usable. Architectural concrete made this possible by reducing wall thicknesses to a minimum. Operation cost must of necessity be kept as low as possible so the problem of maintenance of the structure had to be considered. The fact that concrete provides a structure and finish in one material permitted elimination of many interior finishing materials subject to wear and frequent replacement.

The George Eaves Clinic, now in daily service to a large and grateful community, is a monument to the founder of the anti-tuberculosis movement in Jefferson County, and an enduring tribute to the beauty and utility of the building material that made it possible.

Birmingham's new clinic was built for the Jefferson County Anti-Tuberculosis Association which has been carrying on its work under great obstacles for many years. In keeping with the simplicity of the design, decorative detail was kept to a minimum inside and out.



In the beautiful Greenbrier Valley is Denmar Sanitorium, a new concrete hospital for colored tubercular patients of West Virginia. Designed by J. C. Burchinal, architect, it was built by Doyle & Russell, contractor, at a cost of $237,793.

Denmar Sanitorium—West Virginia

By J. C. Burchinal, A.I.A.

IN 1917 the state of West Virginia purchased a tract of land in the mountains of Pocahontas County in the Greenbrier Valley, near to Droop Mountain of Civil War fame, to be used as a site for the care and treatment of colored tubercular patients. The tract had been the scene of long-abandoned lumbering operations and was improved only by small frame buildings which had served as workmen's barracks and stores. For 22 years these makeshift facilities housed the state's colored tubercular cases.

Since 1933, Col. John Baker White, then a member and later president of the West Virginia Board of Control, had energetically advocated erection of a modern building. These hopes were realized in 1937 when the Legislature, under the leadership of Gov. Homer A. Holt, appropriated funds conditional upon a supplementary PWA grant.

Immediately upon award of the grant, the board of control, professional staffs of state hospitals, and the architect collaborated on formation of a policy with respect to the functional plan and equipment of the building. Adoption of a policy paved the way for consideration of the details of planning and design, and character of materials.

The collaborators had equal interest in fullest cooperation with the principles of PWA regarding utilization of available labor and materials. The building was to be erected in a section devoted almost wholly to agriculture and grazing; on a slight elevation 6 miles from a main highway, accessible only by a decidedly secondary road. A branch line of a railroad which winds its tortuous way through the Greenbrier Valley, operating on unpredictable schedules, offered the only important solution to the problem of transporting materials. Within a radius of 100 miles there could not be found the number of skilled mechanics necessary for construction of a modern building.

On the other hand, the mountains nearby abound with limestone of high quality, and within 30 miles of the site and on the railroad, there is a quarry with crushing and grading facilities capable of supplying fine and coarse aggregates conforming to any reasonable specification.

For 22 years the work of the sanitorium was carried on in this group of old buildings erected as a lumbering camp many years ago.

Consideration of these factors and the fact that the nearest fire department was 60 miles away, led to the decision to construct this building of architectural concrete with reinforced concrete frame and floors, thus providing the greatest security against the hazard of fire. This decision partook of the same spirit of innovation as did the decision to erect the building for—up to this time—no architectural concrete structure had ever been erected by the state of West Virginia, and the structure is the largest of its kind ever erected in the state.

On December 21, 1937, the contract for construction was awarded by the board of control to Doyle & Russell of Richmond, Va., and on January 5, 1938, construction was officially begun. Beneficent weather contributed to almost continuous operations, permitting conclusion of the work and occupation of the structure by December 15.

The building, cruciform in plan, has an over-all length of 223 ft. The center wing, 44x63 ft., is five stories above grade with a subbasement below grade. The end wings, each over 89 ft. long, are four stories above grade. At points of extreme width, the end wings are 38 ft. wide, and are 31 ft. 8 in. wide at the extremities. Provision is made for additional wings when necessity arises.

Above the footings all concrete was made with 6 sacks of portland cement per cu.yd., while in the footings the cement content was reduced to 5 sacks. Careful supervision was given to every operation and particular attention was paid to the water-cement ratio of each batch of concrete, no more than 6¼ gal. of water being permitted to a sack of cement. This resulted in dense concrete of high strength.

All concrete was mechanically mixed and, for the most part, mechanically placed with external and internal vibration used. Construction joints were obscured by V-joints which also served as decorative details.

To produce the smooth, hard finish desired, tempered Presdwood was used for exterior form lining and for floor slabs which were not to be furred. As a consequence, when forms were stripped, two coats of cement paint of selected colors provided very satisfactory exterior and interior finishes without rubbing. Omission of plaster produced substantial economies, especially with respect to all interior stairwells and all ceilings not required to be furred down for accommodation of mechanical equipment.

All exterior walls are 8 and 10 in. thick, furred with 4-in. metal studs, to which were applied metal lath and plaster. Interior partitions, other than concrete, are lath and plaster. The painted concrete ceilings harmonize well with the wall finishes.

Ornamentation was restricted to the decoration of spandrels, parapet panels and belt courses. All ornament and inscriptions were cast with the walls by the use of simple moldings and letters made of wood.

The building has a total volume of approximately 518,353 cu.ft. Of this amount, slightly in excess of one-third is in the center wing. The mechanical room, with adjoining space for coal storage, has been placed in the subbasement of this wing. On the basement, or ground floor, are dining rooms for staff, patients and employes, and ambulance entrance, mortuary, kitchen and serving pantry.

Offices, reception rooms, service rooms and utility space are located on the first floor. At the front of the second floor are the medical departments including operating suite, X-ray room, and examination room. The three floors above the basement in the end wings are devoted solely to hospitalization. Ninety-eight patients can be accommodated in 50 private rooms and 18 wards. The private rooms are designed to accommodate two patients, if necessary, permitting a total of 148 patients in an emergency.

The equipment of the building includes a modern kitchen, automatic elevator, laundry chutes, sterilizing equipment, public address and alarm systems, and other facilities necessary to a modern hospital.

Cost of the building, exclusive of furniture and architect's fee, was approximately $237,793, or 46 cents a cu.ft. The total cost of the project was about $268,000.

For the success of the project much credit is due Hon. Walter R. Thurmond, president of the board of control, and Col. John Baker White and M. D. Carrico, members of the board, and to the federal and state inspectors who cooperated wholeheartedly with the architect and contractor.

Ornamentation was restricted to decoration of spandrels, parapet panels and belt courses. Plain wall areas were cast against tempered Presdwood and finished with portland cement paint.

Previews of Tomorrow Point to Cities of Concrete Buildings Like This

BOTH World's Fairs, like the recent one at Chicago, hold up a mirror to the architecture of tomorrow. The trend they reflect is toward large masses . . . architectural sculpturing . . . dependence upon proportion and arrangement of masses for the architectural effect. And this is the very trend which has been given fresh impetus by the adaptability and versatility of concrete as a design medium.

Many Fair buildings *look* like Concrete—these three permanent ones *are* Concrete!

Three of Treasure Island's buildings are permanent. And they not only *look* like concrete, but *are* concrete. They are the Administration Building pictured above, and two exhibit buildings designed for ultimate use as hangars, which together will form the nucleus of a great air terminal long after the Fair is a memory.

Concrete was chosen here not only because it is keyed to the new spirit in architecture, but because it offers firesafety, permanence, low first cost and low maintenance . . . qualities essential in all except temporary buildings.

Write for *"The NEW Beauty in Walls of Architectural Concrete,"* showing interesting detail, textures and complete buildings.

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A national organization to improve and extend the uses of concrete—through scientific research and engineering field work.

Three permanent buildings on Treasure Island are indicated by the white arrows in the general view. They are the Administration Building (above), the Palace of Fine and Liberal Arts, and the Hall of Transportation. All are Architectural Concrete; all designed by Geo. W. Kelham and Will P. Day, architects.

Architectural Concrete

. . . ARCHITECTURAL AND STRUCTURAL FUNCTIONS COMBINED IN ONE FIRESAFE, THRIFTY MATERIAL

ARCHITECTURAL CONCRETE

VOLUME FIVE NUMBER FOUR

A tall clock tower dominates the main facade of Los Angeles' new Union Passenger Terminal, completed this year at a cost of $11,000,000. It is an architectural concrete structure in typical "Southern Californian" style. Station layout and architectural design were made by representatives of Santa Fe, Southern Pacific and Union Pacific—the railways using the terminal. Donald Parkinson was consulting architect. Robert E. McKee was general contractor.